

AMENDMENTS TO THE CLAIMS

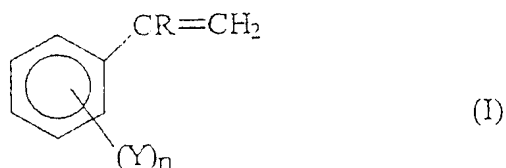
This listing of claims will replace all prior versions, and listings of claims in the application:

Claim 1 (Currently Amended): An expandable ~~Expandable~~ vinylaromatic polymer, comprising polymers which comprise:

- a) a polymeric matrix obtained by ~~polymerizing~~ polymerizing 50-100% by weight of one or more vinylaromatic monomers and 0-50% by weight of a copolymerizable monomer;
- b) 1-10% by weight, calculated with respect to the polymer (a), of an expanding agent ~~englobed~~ embedded in the polymeric matrix[[:]] ;
- c) 0.01-20% by weight, calculated with respect to the polymer (a), of carbon black homogeneously distributed in the polymeric matrix and having an average diameter ranging from 30 to 2000 nm, a surface area ranging from 5 to 40 m²/g, a sulfur content ranging from 0.1 to 2000 ppm and an ash content ranging from 0.001 to 1%.

Claim 2 (Currently Amended): The polymers according to claim 1, wherein the carbon black ~~is characterized by~~ has a weight loss with heat ranging from 0.001 to 1%, an iodine number ranging from 0.001 to 20 g/kg and an absorption value of dibutylphthalate (~~DBPA~~) ranging from 5 to 100 ml/(100 g).

Claim 3 (Currently Amended): The polymers according to claim 1, wherein the vinylaromatic monomer is selected from ~~those corresponding to~~ the group consisting of monomers the following general formula:



wherein R is a hydrogen or a methyl group, n is zero or an integer ranging from 1 to 5 and Y is a halogen, or an alkyl or alkoxyl radical having from 1 to 4 carbon atoms.

Claim 4 (Currently Amended): The polymers according to claim 3, wherein the vinylaromatic ~~monomers~~ monomer having general formula (I) ~~[[are]]~~ is used in a mixture, of up to 50% by weight, with at least one other copolymerizable ~~monomers~~ monomer selected from the group consisting of (meth)acrylic acid, C_1 - C_4 alkyl esters of (meth)acrylic acid, amides of (meth) acrylic acid, nitriles of (meth)acrylic acid, butadiene, ethylene, divinylbenzene, and maleic anhydride.

Claim 5 (Currently Amended): The polymers according to claim 4, wherein the copolymerizable ~~monomers are~~ monomer is acrylonitrile and methylmethacrylate.

Claim 6 (Currently Amended): The polymers according to claim 1, wherein the carbon black has an average diameter ranging from 100 to 1000 nm, a surface area ranging from 8 to 20 m^2/g , (measured according to ASTM D-6556), a sulfur content ranging from 1 to 500 ppm, an ash residue ranging from 0.01 to 0.3% (measured according to ASTM D-1506), a weight loss with heat (measured according to ASTM D-1509) ranging from 0.01 to 0.5%, ~~a DBPA~~ an absorption value of dibutylphthalate (measured according to ASTM D-2414) of 20-80 ml/(100 g) and an iodine number (measured according to ASTM D-1510) ranging from 0.1 to 10 g/kg.

Claim 7 (Previously Presented): The polymers according to claim 1, wherein the carbon black is used in a quantity ranging from 0.1 to 5% by weight, with respect to the polymer.

Claim 8 (Currently Amended): An expandable article, Expandable articles comprising:

[[the]] an expandable vinylaromatic polymers polymer according to claim 1, having a density ranging from 5 to 50 g/l and a thermal conductivity ranging from 25 to 50 mW/mK, ~~generally even over~~ at least 10% lower than that of equivalent-expanded materials without carbon black.

Claim 9 (Currently Amended): A process for the preparation of an expandable vinylaromatic polymers which comprises polymer, comprising:

polymerizing in aqueous suspension one or more vinylaromatic monomers, optionally together with at least one polymerizable comonomer in a quantity of up to 50% by weight, in the presence of a carbon black having an average diameter ranging from 30 to 2000 nm, a surface area ranging from 5 to 40 m²/g, a sulfur content ranging from 0.1 to 2000 ppm and an ash content ranging from 0.001 to 1%, and in the presence of a peroxide radicalic initiator, optionally containing at least one aromatic ring, and at least one expansion agent added before, during or at the end of the polymerization.

Claim 10 (Currently Amended): The process according to claim 9, wherein the carbon black ~~is characterized by~~ has a weight loss with heat ranging from 0.001 to 1%, an

iodine number ranging from 0.001 to 20 g/kg and a ~~DBPA value~~ an absorption value of dibutylphthalate ranging from 5 to 100 ml/(100 g).

Claim 11 (Currently Amended): The process according to claim 9, wherein the polymerization is carried out in the presence of an organic suspending agent, an inorganic suspending agent or both agents ~~of both the organic and inorganic type~~.

Claim 12 (Currently Amended): The process according to claim 11, wherein the inorganic suspending ~~agents are~~ agent is coadjuvated by an anionic surface-active agent ~~agents~~ or sodium metadisulfite.

Claim 13 (Previously Presented): The process according to claim 9, wherein the polymerization in suspension is effected through a solution of vinylaromatic polymer in the monomer, or mixture of monomers, in which the concentration of polymer ranges from 1 to 30% by weight.

Claim 14 (Currently Amended): The process according to claim 9, wherein, at the end of the polymerization, beads of polymer are obtained in a substantially spherical form, with an average diameter ranging from 0.2 to 2 mm inside which the carbon black filler is homogeneously dispersed.

Claim 15 (Currently Amended): The process according to claim 14, wherein the polymer beads obtained at the end of the polymerization are washed with a non-ionic surface-active agent ~~agents~~.

Claim 16 (Currently Amended): The process according to claim 9, wherein during the polymerization, at least one polymerization flame-retardant agent is added in a quantity ranging from 0.1 to 8% by weight, with respect to the weight of the resulting polymer.

Claim 17 (Currently Amended): The process according to claim 9, wherein the at least one expansion agent is added during the polymerization phase and is selected from the group consisting of aliphatic hydrocarbons comprising 3 to 6 carbon atoms, ~~[[of]]~~ cycloaliphatic hydrocarbons comprising from 3 to 6 carbon atoms, halogenated derivatives of aliphatic hydrocarbons comprising from 1 to 3 carbon atoms, carbon dioxide and water.

Claim 18 (Currently Amended): A process for preparing, in mass and continuously, an expandable vinylaromatic polymer ~~polymers~~ which comprises, ~~the following steps~~ in series:

i. feeding a vinylaromatic polymer, ~~as described above~~, to an extruder, together with a carbon black filler, having an average diameter ranging from 30 to 2000 nm, a surface area ranging from 5 to 40 m²/g, a sulfur content ranging from 0.1 to 2000 ppm and an ash residue ranging from 0.001 to 1%;

ii. heating the vinylaromatic polymer to a temperature higher than the relative melting point, to obtain a molten polymer;

iii. injecting ~~[[the]]~~ an expanding agent and optionally an additive ~~possible additives~~ ~~such as flame-retardant agents~~, into the molten polymer before extrusion through a die; and

iv. forming expandable beads, through a die, in a substantially spherical form with an average diameter ranging from 0.2 to 2 mm.

Claim 19 (Currently Amended): The process according to claim 18, wherein the carbon black filler ~~is characterized by~~ has a weight loss with heat ranging from 0.001 to 1%, an iodine number ranging from 0.001 to 20 g/kg and ~~a DBPA value~~ an absorption value of dibutylphthalate ranging from 5 to 100 ml/(100 g).

Claim 20 (Currently Amended): The process according to claim 18, further comprising: ~~wherein the expandable beads produced are pre-treated using methods generally applied to beads produced with conventional processes which comprise:~~

a) pretreating coating the expandable beads by coating with a liquid antistatic agent, to obtain pre-treated beads;

b) applying ~~[[the]]~~ a coating to the pre-treated beads ~~thus treated~~, said coating ~~essentially consisting of~~ comprising (i) a mixture of mono-, di- and tri-esters of glycerin with fatty acids ~~and of~~ , (ii) a metallic stearates stearate ~~such as zinc stearate magnesium stearate~~ or (iii) a combination of (i) and (ii) thereof;

wherein~~[[,]]~~ the liquid antistatic agent is selected from the group consisting of amines, tertiary ethoxylated alkylamines ~~[[,]]~~ and ethylene oxide~~[[, and]]~~ propylene oxide copolymers.

Claim 21 (Previously Presented): The process according to claim 20, wherein the carbon black filler is also added to the coating together with the mixture of esters.

Claim 22 (New): The process according to claim 18, wherein a flame retardant is added in step iii.

Claim 23 (New): The process according to claim 18, wherein the metallic stearate is zinc stearate or magnesium stearate.